Update on non-CO2 MRV operationalisation

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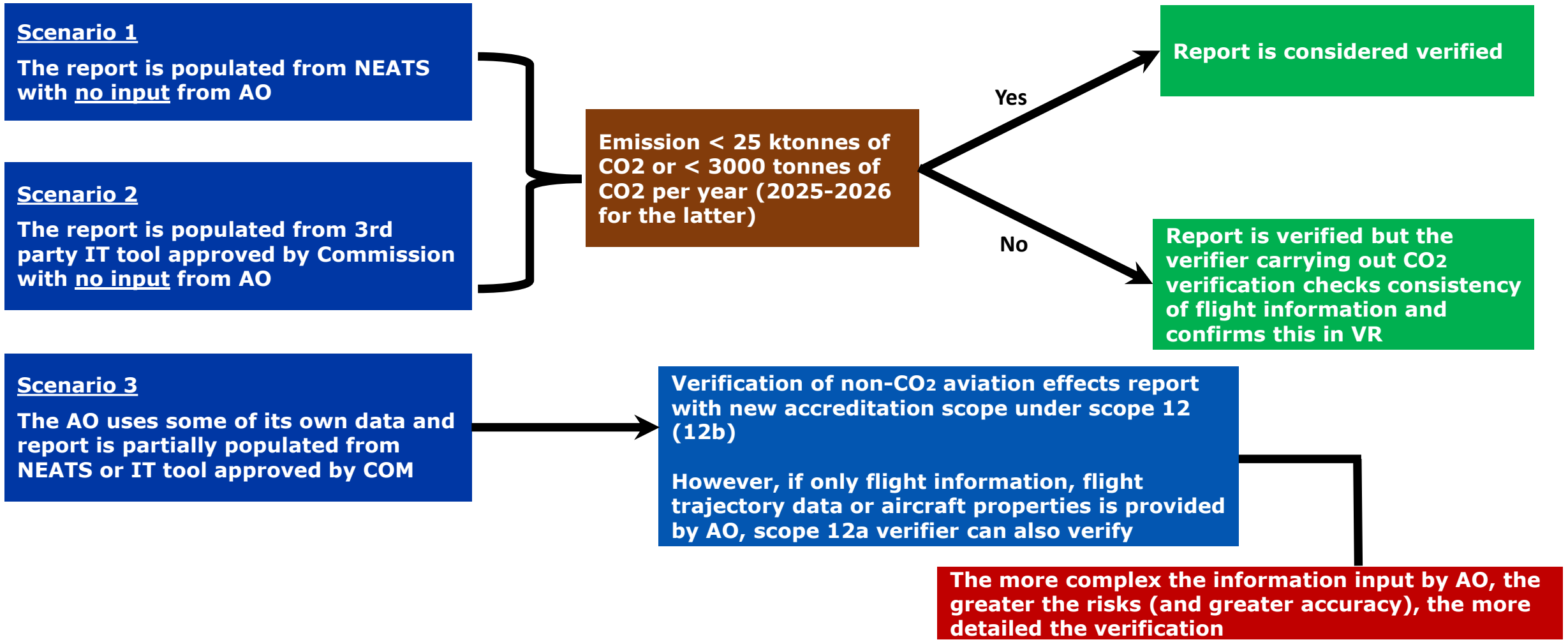
Overview

- State of play and timeline
- Accreditation and Verification regulation (AVR) update
- Reminder on NEATS (what it is and what it is not!) and what to collect (Primary data) in pre-NEATS environment
- Non-CO2 sheet Monitoring plan run-through and exemples
- Guidance for MRV overview

State of play and timeline

- *Monitoring and Reporting regulation (MRR) update* - *Commission Implementing Regulation (EU) 2024/2493 of 23 September 2024*
  - **Monitoring plan template** :developed with MS, CCEG, refinement and formatting underway – TBP in December
  - **Initial* Guidance document** : completing available ones : *FAQ* and *June 2024 Step by Step guide*) – TBP in December/January
  - **Guidance workshop** : How to start the MRV in pre-**NEATS** environment ? – **6** December
  - **Trainings** on filling-in the monitoring plan – **9** and **12** December (+ **2** December for CA and verifiers)
  - *Final Guidance document (and associated training on NEATS) to take place in 2025 (once NEATS is made available,- possibly a beta version)
  - Documentation informing NEATS (models' parameters, efficacy definition, NWP, etc.) – exp. late February 2025
- *Accreditation and Verification regulation (AVR) update* – underway
  - Draft concept and initial legal drafting presented to MS
  - Envisaged adoption : Q1/Q2 2025

AVR scenarios 1, 2, 3 for non-CO2 verification



AVR Scenario 3 non-CO2 verification

- Mandatory use of BADA to run comparative checks in the case of aircraft properties and aircraft performance
- Mandatory use of CTFM, RTFM or FTFM or equivalent in data accuracy or ADS-B when checking completeness of flight trajectory data
- Requirement on how the verifier checks fuel properties, weather data, fuel burn method, emission estimation method, data gaps
- Materiality level for the verification of non-CO2 aviation effects - proposed level is 5% of total aggregated CO2 equivalent reported in the non-CO2 aviation effects report. Further analysis is being made on whether the 5% is appropriate
- Verification scope 12a (aviation CO2) and 12b (aviation non-CO2)

Non-CO2 Aviation Effects Tracking System (NEATS)

- ***What is NEATS ?***

The NEATS is the IT tool provided by the Commission *to facilitate and, to the extent possible, automatise monitoring, reporting and verification in order to minimise any administrative burden (Art14.5 EU ETS Directive).*

NEATS streamlines the monitoring process as it incorporates available third-party collected data, state-of-art modules (e.g. Base for aircraft data, Boeing fuel flow method) and models (e.g. openAirClim, Contrail cirrus prediction model (CoCiP), algorithmic Climate Change Functions (aCCF)) needed for the calculation of CO2(e) per flight in line with the EU ETS Directive and Monitoring and Reporting Regulation (MRR). NEATS executes the calculation on a per flight level for Global Warming Potential (GWP) of 20, 50, and 100 years.

NEATS streamlines also the annual reporting exercise referred to in Article 68(5) of the MRR. NEATS generates automatically the XML table referred to in Annex X, Section 2a(9) to the MRR at the end of each reporting year, minimising administrative burden associated with reporting.

NEATS streamlines the verification and cross-checks done respectively by the verifier and the competent authority. It provides the means to verify a CO2(e) per flight, while protecting confidential data.

NEATS allows to store all the data (from aircraft operators and from third parties), securely encoding and protecting from release confidential primary data, where such data is uploaded by the aircraft operator on NEATS, as long as it is identified as confidential by the aircraft operator in NEATS.

- ***What NEATS is not?*** NEATS is not a tool that enables the collection of data by the aircraft operator.
- ***And in absence of NEATS?*** Monitor at minimum (Primary data) flight information and aircraft properties (Art56b(6) MRR)

MRV data and what NEATS will provide

1. Flight information (call sign in UTC)
- a. Flight number
- b. Day and time
- c. Departure and arrival airport (ICAO codes and/or IATA location identifiers)

Provided by NEATS (can be checked and corrected by AO)
Non-confidential
Needed in both Method C (weather-dependent (DEFAULT) approach and Method D (location-simplified approach)

2. Flight trajectory (4D)
- a. Timestamp (time interval between 2 time stamps, ideally 60 sec but could be more (linear interpolation within a flight phase, esp. cruise)
- b. Latitude
- c. Longitude
- d. Altitude

Provided by NEATS (source: ECTL : model 1,2,3 with possible alternatives and equivalence in terms of data)
Non-confidential
Needed in both Method C&D (different definition depending on the Method)

3. Aircraft properties
- a. Aircraft type
- b. Engine UID
- c. Aircraft mass along the trajectory

Can be provided by NEATS (if Defaults are used, Annex IIIb of MRR – conservative defaults values for engine UID per aircraft type, based on ICAO EDB)
Non-confidential (?) (unless aircraft mass is not provided, and if AO needs to provide load factor, unless Default value of 1 is used) Needed in both Method C&D

4. Aircraft performance (*optional*)
- a. Fuel flow
- b. Aircraft performance model
- c. Engine efficiency

If no fuel flow measured or estimated through own models, NEATS will estimate it (ECTL BADA)
Confidential
Optional in both Method C&D

5. Fuel properties
- a. Hydrogen to carbon (H/C) ratio
- b. Aromatic content of the fuel
- c. Sulphur
- d. Naphthalene
- e. Net calorific value

Challenge : mixed in airport fuel farm. Leads on finding the data : e.g. info from fuel suppliers per batch to purchasing AO; AO to determine dynamic max levels per airport according to batches, to be used to calculate H/C per flight.
Coordination with ReFuelEU (Art.10) encouraged.
Confidential (?). Defaults in NEATS: max regularatory (known) levels (ASTM)
Needed in Method C

6. Weather data
- a. Basic weather data (altitude corrected humidity, temperature, pressure), OR
- b. Enhanced weather data (above + RHi, etc) through NWP

Common reference NWP model provided through NEATS (national weather service)
Enhanced and basic needed respectively in Method C and Method D

Exempli gratia (e.g) (non-exhaustive)

- Case 1 : NEATS, no input from AO
- Case 2 : NEATS, minor input from AO (e.g. flight trajectory, aircraft properties)
- Case 3 : NEATS, more advanced input from AO (e.g. fuel properties, aircraft performance, weather data)
- Data gaps and absence of NEATS

NB: Text boxes filling structure and content in the draft monitoring plan template is an example for the sole purpose of the training, and is not meant to be exhaustive or to represent a recommended way to approach the boxes.

Case 1 : NEATS, no input from AO

Non-CO2 Effects

18 Non-CO2 Effects

Only aeroplanes with jet engines are subject to the monitoring, reporting and verification obligation for non-CO2 effects (non-CO2 MRV). Other aircraft are not subject to the non-CO2 MRV even if they are subject to the EU ETS with regard to CO2 emissions. If you do not operate any flights with aeroplanes with jet engines, you are not subject to the non-CO2 MRV obligation.

In addition, for the years 2025 and 2026, you can choose the geographical scope for which the non-CO2 MRV is to be applied. For these two years, you are free to choose between the full geographical scope (intra-EEA and outbound/inbound to/from EEA flights), the reduced geographical scope (intra-EEA flights), or in-between geographical scope, where only some of the extra-EEA flights are chosen on top of the reduced geographical scope, without this having any effect on your CO2 emissions obligations.

(a) Please confirm whether your operate flights with aircraft that are aeroplanes equipped with jet engines.

If you answer "FALSE" here, e.g. because you only operate helicopter flights or flights with propeller aeroplanes, you do not need to provide any further information on the non-CO2 MRV.

TRUE

(b) Please select the geographical scope in which you would like to perform the non-CO2 MRV in 2025 and 2026.

Your decision regarding the non-CO2 MRV can be made independently of your obligations regarding your CO2 emissions. Different geographical scopes can also be used in each reporting year. However, this makes it necessary to update the monitoring plan.

Please select

(c) Please describe the chosen in-between geographical scope.

Please describe what are the routes the in-between scope covers on top of intra-EEA scope.

- Note : a choice of in-between scope could cover outbound as well as inbound from/to EEA routes

Case 1 : NEATS, no input from AO

19 Choice of IT tool for determining the non-CO2 effects

In order to determine the non-CO2 effects from the flights, different data are required. These data can either be collected and provided by you or obtained from an independent data source. The climate impact of the non-CO_2 effects is calculated using the provided data. For this purpose, you can use the NEATS information technology (IT) tool, provided by the European Commission, or an alternative tool.

(a) Please specify which IT tool you will use for determining the non-CO2 effects.

You can choose between NEATS as provided by the European Commission, your own or a third-party IT tool, or a combination of NEATS and these tools. With regard to the combination, there are minimum restrictions on the proportion of NEATS and own components (same common reference Numerical Weather Prediction (NWP) model and weather data, as the one provided through NEATS is to be used no matter the choice of the IT tool).

NEATS

(b) Please confirm whether you will use an IT tool approved by the European Commission.

Own and third-party IT tools or combinations of NEATS and these tools may only be used if they have been previously approved by the European Commission. This does not apply to the fuel burn module (it can be used without an approval by the European Commission). If available, please attach also the approval by the Commission.

Please select

(c) Please specify whether the IT tool used is able to take "efficacy" into account.

"Efficacy" is the change in global mean temperature per unit radiative forcing exerted by the climate agent, relative to the response generated by a standard CO2 forcing starting from the same initial climate state. The aircraft operator must use efficacy as it is used in NEATS (same weighting). It is only allowed to deviate from this principle if evidence is provided to the Competent Authority that the use of "efficacy" is not possible in the IT tool used.

Please select

(d) If you have selected "FALSE" in point 19(c), please provide information on why it is not possibly to use efficacy.

Please explain clearly why you cannot currently use "efficacy" and what measures are planned to take the "efficacy" into account in the future.

- Note : the absence of NEATS in the beginning of the MRV, should not prevent choosing NEATS in the MP (and describing in Section 22 how the flight information and aircraft properties per flight are to be monitored in absence of NEATS)

Case 1 : NEATS, no input from AO

77 **(k) Please specify which method for the determination of CO2 equivalent (CO2(e)) you apply.**

If you are not a small emitter pursuant to Article 55(1) of the MRR, the use of Method C is mandatory. Small emitters can apply method D. It is also possible for small emitters to use different methods for different aircraft types.

78

79	Method C	

80

81 **(l) Please specify whether you intend to provide any Primary data other than checking the flight information**

If you select "FALSE", i.e. if you don't intend to provide any Primary data, the climate impact of the non-CO2 effects of your flights is calculated in an automatic manner based on the Secondary data available in the IT tool (description below of Primary and Secondary data). In this case, and when NEATS is used, only the flight information must be checked in NEATS (this still requires description of how flight information is determined (point 20(a)). For all other parameters, NEATS uses Secondary data obtained from external data sources or default values.

82

Primary data is measured and/or monitored and/or defined and recorded data directly by the aircraft operator (e.g. actual flight trajectory, engine identifiers, aircraft mass along the trajectory, fuel flow, fuel properties). Primary data is reputed more precise from what can be provided through NEATS (Secondary data). Secondary data is the data provided by NEATS, without input of the aircraft operator.

83

84	FALSE

85

86 **20 Determination of flight information**

In addition to monitoring the departure and arrival of each flight, the flight number and the date and time of the flight are relevant for the MRV of non-CO2 effects. All flights that are already subject to the CO2 emissions trading obligation must be monitored. The only exceptions are flights that are not operated by aeroplanes with jet engines.

88

90 **(a) Please provide a description of how flight numbers, dates and times are assigned to flights (e.g. which sources you use, and how you use them).**

In addition to the departure and arrival airports, the date and time of the flight, specified in Universal Time Coordinated (UTC), are relevant for the MRV of non-CO2 effects. Please describe how you assign these data to your flights that are already subject to the CO2 monitoring and reporting obligation so that there is no inconsistency in the reported flights

91

93	Flight information is recorded per flight and transmitted into OMS… Extraction of data… Key risks…

94

- Note : Section 19(k) is related to being small emitter or not; Section 19(l) choice of FALSE will keep open only 20(a) and 22. Do check the difference between Primary and Secondary data

Case 2 : NEATS, minor input from AO

77 **(k) Please specify which method for the determination of CO2 equivalent (CO2(e)) you apply.**

If you are not a small emitter pursuant to Article 55(1) of the MRR, the use of Method C is mandatory. Small emitters can apply method D. It is also possible for small emitters to use different methods for different aircraft types.

78

79	Method C	

80

81 **(l) Please specify whether you intend to provide any Primary data other than checking the flight information**

If you select "FALSE", i.e. if you don't intend to provide any Primary data, the climate impact of the non-CO2 effects of your flights is calculated in an automatic manner based on the Secondary data available in the IT tool (description below of Primary and Secondary data). In this case, and when NEATS is used, only the flight information must be checked in NEATS (this still requires description of how flight information is determined (point 20(a)). For all other parameters, NEATS uses Secondary data obtained from external data sources or default values.

82

Primary data is measured and/or monitored and/or defined and recorded data directly by the aircraft operator (e.g. actual flight trajectory, engine identifiers, aircraft mass along the trajectory, fuel flow, fuel properties). Primary data is reputed more precise from what can be provided through NEATS (Secondary data). Secondary data is the data provided by NEATS, without input of the aircraft operator.

83

84	TRUE

85

86 **20 Determination of flight information**

In addition to monitoring the departure and arrival of each flight, the flight number and the date and time of the flight are relevant for the MRV of non-CO2 effects. All flights that are already subject to the CO2 emissions trading obligation must be monitored. The only exceptions are flights that are not operated by aeroplanes with jet engines.

88

90 **(a) Please provide a description of how flight numbers, dates and times are assigned to flights (e.g. which sources you use, and how you use them).**

In addition to the departure and arrival airports, the date and time of the flight, specified in Universal Time Coordinated (UTC), are relevant for the MRV of non-CO2 effects. Please describe how you assign these data to your flights that are already subject to the CO2 monitoring and reporting obligation so that there is no inconsistency in the reported flights

91

93	Flight information is recorded per flight and transmitted into OMS… Extraction of data… Key risks…

- Note : Section 19(l) choice of TRUE will keep open all the fields in the sheet. Do check the difference between Primary and Secondary data

Case 2 : NEATS, minor input from AO

21 Determination of flight trajectory, weather data, aircraft properties, aircraft performance and fuel properties

The following data are relevant for the MRV of non-CO2 effects. For each data type, there are two options: Primary data or Secondary data (see definition in Section 19(l)).

(a) Flight trajectory

(i) Please specify whether the same method for determining the 4D flight trajectory is used for all aircraft types.

If you use the same method to determine the 4D flight trajectory for all aircraft types, please fill in the following fields. Otherwise, you need to specify the corresponding information separately for each aircraft type in table (v) below.

TRUE

~~<<< If you have chosen "False" for point 21(a)(i), please continue directly to section 21(a)(v). >>>~~

(ii) Please specify which data source is used for determining the 4D flight trajectory.

Primary data are reputed more precise from what can be found in NEATS in terms of Secondary data for flight trajectories(EUROCONTROL's Filed Tactical Flight Model (FTFM), Regulated Tactical Flight Model (RTFM), Current Tactical Flight Model (CTFM)).

FTFM (or Model 1) contains a point and airspace volume profile created in Enhanced Tactical Flow Management System (ETFMS) for a flight when the flight plan details, and subsequent changes, are received from Central Flow Management Unit (CFMU). It is the initial profile as it reflects the status of the demand before activation of the regulation plan and computed with the latest flight plan version sent by each AO to the CFMU.

RTFM (or Model 2) is the version of FTFM where Air Traffic Flow and Capacity Management (ATFCM) measures have been applied to the flight. It reflects the status of the demand after activation of the regulation plan and is computed with the latest slot Take-Off Time issued to the aircraft operator by the ground regulation system.

CTFM (or Model 3) is computed with radar data sent by area control centers to CFMU/ETFMS. In such, it represents a fused version of FTFM with real data.

Please specify whether you want to use primary or secondary data to determine the 4D flight trajectory.

Primary data

- Note : Do check the difference between FTFM, RTFM and CTFM

Case 2 : NEATS, minor input from AO

(iii) Please describe the source of the Primary data and the procedure for determining the 4D flight trajectory.

If you use Primary data, the source and procedure for determining the 4D flight trajectory must be described in detail. Specify how the data are recorded and forwarded for processing. Clarify how these data are considered to be more precise compared to secondary data available in NEATS. Make sure that the time interval between two time stamps does not exceed 60 seconds. During the same flight phase, however, especially the cruise phase, the data can also be measured at longer intervals if it is ensured that the values for all time stamps can be determined by linear interpolation.

Position (space, time) coordinates are recorded in the follwoing manner…

(iv) Please describe all methods to determine the 4D flight trajectory used for the different aircraft types.

This section has to be completed if "FALSE" has been chosen in section 21(a)(i).

The same rules apply here per aircraft type as for the section 21(a)(ii) to (iv) above.

Generic aircraft type (ICAO aircraft type designator) and sub-type	Data source used for determining the 4D flight trajectory	Description of the source and procedure for determining the 4D flight trajectory
	Please select	
	Please select	
	Please select	
	Please select	
	Please select	
	Please select	
	Please select	
	Please select	
	Please select	
	Please select	

Please add further lines if needed. For this purpose it is recommended to copy a full line above, and then use the "insert copied cells" command available in the

Case 2 : NEATS, minor input from AO

179 **(c) Aircraft properties I (aircraft type)**

Some of the following data are not required if the fuel flow along the flight trajectory is measured directly. However, they are still necessary in the event of data gaps occurring during direct measurement.

181

183 **(i) Please describe the procedure for determining the aircraft type per flight.**

184 *Please describe how you assign the correct aircraft type to each flight.*

Description…
Input into system…
Extraction of data…
Key risks…
185 Control activities…

186

187 **(ii) Please specify whether the same method for determining the engine unique identifier is used for all aircraft types.**

If you use the same method to determine the engine identifier for all aircraft types, please fill in the following fields. Otherwise, you need to specify the corresponding information separately for each aircraft type in table (v) below.

188

189 TRUE

190

191 <<< If you have chosen "False" for point 21(c)(ii), please continue directly to section 21(c)(v). >>>

192

193 **(iii) Please specify the data source used for the engine unique identifier per flight.**

Please indicate whether you want to use Primary data for determining the engine identifier or whether you want to use Secondary data (default values in accordance with Annex IIIb of the MRR).

194

195 Please select

196

197 **(iv) Please describe the procedure for determining the engine unique identifier per flight.**

198 *Please describe here how you assign the engine identifiers of the engines used for each flight.*

Description…
Input into system…
199 Extraction of data…

Case 2 : NEATS, minor input from AO

(d) Aircraft properties II (aircraft mass)

(i) Please specify whether the same method for determining the mass along the flight trajectory is used for all aircraft types.

If you use the same method to determine the aircraft mass along the flight trajectory for all aircraft types, please fill in the following fields. Otherwise, you need to specify the corresponding information separately for each aircraft type in table (iv) below.

Please select

<<< If you have chosen "False" for point 21(d)(i), please continue directly to section 21(d)(iv). >>>

(ii) Please specify which data source is used for determining the mass of the aircraft along the flight trajectory.

The mass of the aircraft along the flight trajectory corresponds to the take-off mass minus the mass of the fuel already burnt. If this value is known, it is Primary data. Otherwise, the mass of the aircraft along the flight trajectory can be estimated using either the known take-off mass or the known load factor or a load factor of 1 (in all these cases, select "Secondary data (Default values according to MRR Annex IIIa point (5)(2b)).

Default values according to MRR Annex IIIa point

(iii) Please describe the method for determining the mass of the aircraft along the flight trajectory.

In particular, if you determine the mass along the flight trajectory using actual data, the procedure must be described in detail. Specify how the data is recorded and forwarded for processing. If you use default values, specify which values are involved and how you estimate the mass along the flight trajectory. Make sure that the time interval between two time stamps does not exceed 60 seconds. During the same flight phase, however, especially the cruise phase, the data can also be measured at longer intervals if it is ensured that the values for all time stamps can be determined by linear interpolation.

Description…
Input into system…
Extraction of data…
Key risks…
Control activities…

(iv) Please describe all methods used to determine the aircraft mass along the flight trajectory for the different aircraft types.

This section has to be completed if "FALSE" has been chosen in section 21(d)(i).

The same rules apply here per aircraft type as for the section 21(d)(ii) to (iii) above.

- Note : In Section 21(d)(ii), even choosing Default values will require further description in 21(d)(iii) in order to avoid load factor=1

Case 3 : NEATS, more advanced input from AO

(b) Weather data

(i) Please specify whether the same method for determining the weather data is used for all aircraft types.

If you use the same method to determine the weather data for all aircraft types, please fill in the following fields. Otherwise, you need to specify the corresponding information separately for each aircraft type in table (v) below.

TRUE

~~<<< If you have chosen "False" for point 21(b)(i), please continue directly to section 21(b)(v). >>>~~

(ii) Please specify which type of weather data is used.

If you are not a small emitter pursuant to Article 55(1) of the MRR, the use of Method C is mandatory, and therefore also the use of the same common reference Numerical Weather Prediction (NWP) model and weather data, as the one provided through NEATS, at the minimum. If these cannot be provided by NEATS in the reporting period, the basic weather data and Method D are used, as an interim measure, without the need to adjust the monitoring plan (MRR Article 56b(7)). Corresponding note must then be made by the aircraft operator in the emissions report indicating what Method was used and for what period. Small emitters that have opted for Method D select the basic weather data here.

Enhanced weather data

(iii) Please select which data source you are using for the weather data.

Please select the data source from which the weather data originates, which you are using.

NEATS

(iv) Please describe the procedure for determining the weather data.

Please describe in detail where you obtain your enhanced weather data from, provided that the same common reference NWP model and weather data, as the one provided through NEATS, must be used, at the minimum.

(v) Please describe all methods to determine the weather data used for the different aircraft types.

- Note : <u>Focus on determining the weather data 1/2</u> : If NEATS is used no need to provide own weather data

Case 3 : NEATS, more advanced input from AO

(b) Weather data

(i) Please specify whether the same method for determining the weather data is used for all aircraft types.

If you use the same method to determine the weather data for all aircraft types, please fill in the following fields. Otherwise, you need to specify the corresponding information separately for each aircraft type in table (v) below.

TRUE

~~<<< If you have chosen "False" for point 21(b)(i), please continue directly to section 21(b)(v). >>>~~

(ii) Please specify which type of weather data is used.

If you are not a small emitter pursuant to Article 55(1) of the MRR, the use of Method C is mandatory, and therefore also the use of the same common reference Numerical Weather Prediction (NWP) model and weather data, as the one provided through NEATS, at the minimum. If these cannot be provided by NEATS in the reporting period, the basic weather data and Method D are used, as an interim measure, without the need to adjust the monitoring plan (MRR Article 56b(7)). Corresponding note must then be made by the aircraft operator in the emissions report indicating what Method was used and for what period. Small emitters that have opted for Method D select the basic weather data here.

Enhanced weather data

(iii) Please select which data source you are using for the weather data.

Please select the data source from which the weather data originates, which you are using.

Other

(iv) Please describe the procedure for determining the weather data.

Please describe in detail where you obtain your enhanced weather data from, provided that the same common reference NWP model and weather data, as the one provided through NEATS, must be used, at the minimum.

Description…
Input into system…
Extraction of data…
Key risks…
Control activities…

- Note : <u>Focus on determining the weather data 2/2</u> : If NEATS not used, same NWP and weather data is used as in NEATS. This implies that additional weather data can be provided.

Case 3 : NEATS, more advanced input from AO

253 **(e) Aircraft performance (optional)**

The aircraft performance along the 4D flight trajectory can be optionally used to increase the accuracy of the calculation of the CO2 equivalents. It must be ensured that the method for determining the 4D flight trajectory and the method for determining the aircraft performance along the 4D flight trajectory are aligned with each other.

255

257 **(i) Please specify whether you would like to apply the option of determining the fuel flow along the flight trajectory based on aircraft performance.**

Please specify whether you want to use the aircraft performance along the flight trajectory to increase the accuracy of the calculation of non-CO2 effects on climate. The corresponding information on pollutants emissions calculated using the aircraft properties data will be overridden in this case. As the use of aircraft performance is optional according to the MRR, you can always fall back on the data from the calculation using the aircraft properties if the aircraft performance data is not available to you.

258

259 TRUE

260

261 <<< If you have chosen "False" for point 21(e)(i), please continue directly to section 21(f). >>>

262

263 **(ii) Please specify whether you use the same method for determining the aircraft performance for all aircraft types.**

If you use the same method to determine the aircraft performance for all aircraft types, please fill in the following fields. Otherwise, you need to specify the corresponding information separately for each aircraft type in table (v) below.

264

265 TRUE

266

267 <<< If you have chosen "False" for point 21(e)(ii), please continue directly to section 21(e)(v). >>>

268

269 **(iii) Please specify which method you use for determining the aircraft performance for all aircraft types.**

The measured or calculated fuel flow can be used to determine the aircraft performance along the 4D flight trajectory. If this is not available, it can be determined using the engine thrust.

270

271 Please select

272

273 **(iv) Please describe the method for determining the aircraft performance along the flight trajectory.**

Please describe in detail the procedure for determining the aircraft performance along the 4D trajectory. Specify how the data is recorded or calculated and forwarded for processing. Please note that the time interval between two time stamps must not exceed 60 seconds. During the same flight phase, however, especially the cruise phase, the data can also be measured or calculated at longer intervals if it is ensured that the values for all timestamps can be determined by linear interpolation.

274

Description…

- Note : Section 21(e)(iii) facilitates with identification of 3 options (+ default) to determine aircraft performance

Case 3 : NEATS, more advanced input from AO

295 **(f) Fuel properties (optional for Method D)**

296

297 **(i) Please specify whether you apply the option of determining the fuel properties.**

Small emitters, as defined in Article 55(1), may use method D. In this case, the inputs of this section are optional. All other aircraft operators must fill this section. Please specify here if you are determining fuel properties other than by using the default values.

298

299 TRUE

300

301 ~~<<< If you have chosen "False" for point 21(f)(i), please continue directly to section 22. >>>~~

302

303 **(ii) Please specify whether you use the same method for determining the fuel properties for all aircraft types.**

If you use the same method to determine the fuel properties for all aircraft types, please fill in the following fields. Otherwise, you need to specify the corresponding information separately for each aircraft type in table (v) below.

304

305 TRUE

306

307 ~~<<< If you have chosen "False" for point 21(f)(ii), please continue directly to section 21(f)(v). >>>~~

308

309 **(iii) Please specify which data source you use for determining the fuel properties.**

310 *Please indicate whether you want to use the actual data for determining the fuel properties or whether you want to use default values in accordance with the MRR.*

311 Please select

312

313 **(iv) Please describe the method you use for determining the fuel properties.**

In particular, if you use actual values for the fuel properties, the procedure for determining them must be described in detail, including how this relates to flight phases, if deemed appropriate. These values cannot be average values. Specify how and by whom the data is collected and forwarded for processing.

314

Description…
Input into system…
Extraction of data…
Key risks…
Control activities…

315

- Note : If absence of measured values (aromatics, sulphur, H/C, etc.), for the time being it is recommended for CA to accept determined maximum level per airport according to batches (no averages or equivalent values) to avoid ASTM default values for AO. Further guidance to come.

Data gaps and absence of NEATS

22 Dealing with data gaps

If any of the data described above that are necessary for calculating the non-CO2 effects are not available, surrogate data must be used. Please name the surrogate data to be used in each case below. This is not necessary for data that already originates from NEATS (Secondary data).

Where NEATS is unavailable, the aircraft operator shall monitor at a minimum the flight information and aircraft properties per flight. In such case the CO2(e) calculation per flight shall be performed at a later stage by the aircraft operator, at the latest once NEATS is made available (calculation is retroactive for the period of unavailability of NEATS). Therefore, in case you have above selected NEATS for the monitoring of the aircraft properties, please describe how these data are monitored if NEATS is not available.

(a) Please describe the procedure you use for closing data gaps.

Please describe for the individual data sets which surrogate data (in order, if applicable) you use if the original data is not available. This is not necessary if the original data are already default values according to the MRR. In your description, please also make sure that the surrogate data used is consistent with the original data of other data sets.

Data gaps (Identification…Description…Extraction of data, etc)
Flight info, if NEATS not available (Description…Input into system…Extraction of data…Key risks…Control activities…)
Aircraft properties, if NEATS not available (Description…Input into system…Extraction of data…Key risks…Control activities…)

23 Consistency between 4D flight trajectory and aircraft performance

The data of the 4D flight trajectory and the aircraft performance along this trajectory must match each other. It must therefore be ensured that data sources are used that ensure compatibility. This also applies in the event that data is missing for one of the data sets.

(a) Please describe the procedure to ensure consistency of the 4D flight trajectory and the aircraft performance.

Please describe how it is ensured that the 4D flight trajectory data matches the aircraft performance data. For example, is the measurement data recorded at the same time stamps? Do planning data and measured data have to be merged and how is this done?

- Note : Other than encountered data gaps when it comes to Primary data, the section 22 complements the sections above, specifically sections 20, 21(c), 21(d) allowing the AO to explain how Primary data is monitored (at least for flight info and aircraft properties) in the absence of NEATS. If nothing specific compared to previous sections, this section could be redundant.

Initial guidance document overview

MRV non-CO_2 data collection Guidance for Aircraft Operators

DRAFT

This document provides an initial guidance to Aircraft Operators relating to the collection of data for the Monitoring, Reporting and Verification (MRV) of Non-CO_2 aviation effects, before NEATS[1] is made available

Thank you